REMARKS

Claims 49-96 have been canceled. Claims 1-48, 97 and 98 and new Claims 99-135 are active in the present application. Claims 1-48, 97 and 98 stand withdrawn from consideration. Reconsideration is respectfully requested.

The present invention relates to a transfer belt that is used in various types of electrophotographic image forming apparatus.

Invention

The present invention as claimed in Claim 99 is directed to an intermediate image transfer belt for an image forming apparatus that comprises an image carrier for forming a latent image, a developing device for developing said latent image with a developer to thereby form a corresponding toner image and said intermediate image endless transfer belt to which said toner image is transferred from said image carrier, and executes primary image transfer from said image carrier to said intermediate image endless transfer belt and then executes secondary image transfer from said intermediate image endless transfer belt to a recording medium. The endless transfer belt is prepared by feeding a first raw liquid rubber material into a hollow, cylindrical mold, which is included in a centrifugal molding machine, with said mold being rotated, and then curing the first raw rubber material to thereby form a first outer belt layer on an inside of the mold. A second raw liquid resin material is fed into the mold with said mold being rotated, and then the second resin raw material is cured to thereby form a second inner belt layer. By this process the first outer belt layer has elasticity while the second inner belt layer has greater hardness than said first outer belt layer. Further, the first outer belt layer has a surface gloss of at least

50, a hardness ranging from 30° to 70°, as measured by JIS A scale, and a thickness of 200 to 2000 μm and the second inner belt layer has a thickness ranging from 30 to 1,000 μm and has a hardness greater than that of the first outer belt layer.

In the embodiment of the invention of Claim 118, the endless transfer belt is prepared by feeding a first raw liquid rubber material into a hollow, cylindrical mold, which is within in a centrifugal molding machine, with the mold being rotated to thereby form an endless first outer film on an inner surface of said mold, and then feeding a second raw liquid resin material into the mold with the mold being rotated to thereby form a second inner belt layer on said first film. Subsequently, the raw liquid materials respectively are cured forming a first film and a second film. The first film forms, when cured, an elastic, first outer belt layer while the second forms, when cured, a second inner belt layer having greater hardness than the first outer belt layer; wherein the first outer belt layer has a surface gloss of at least 50, a hardness ranging from 30° to 70°, as measured by JIS A scale, and a thickness of 200 to 2000 μm and the second inner belt layer has a thickness ranging from 30 to 1,000 μm and has a hardness greater than that of the first outer belt layer.

Prior Art Rejection

Claims 99-135 stand rejected based on 35 USC 103(a) as obvious over Tanaka et al, U.S. Patent 5,978,638. This ground of rejection is respectfully traversed.

Although the Tanaka et al patent discloses an endless intermediate transfer belt for an image forming apparatus, the basic bi-layer construction of the belt is not the same as the bi-layer belt of the present invention. In Tanaka et al, the bi-layer belt that is constructed is formed of a first rubber layer that is formed on the outside of a cylindrical mold (see Example

1 of the patent) which is then cured. Thereafter, a second (covering) layer of a resin is formed on the cured rubber layer. By this construction, the endless belt that is formed and placed in the image forming apparatus is so configured that the outer belt layer that comes into contact with a transfer medium P (paper) is the resin layer of the belt. The first cured rubber layer of the belt is the inner layer which supports the outer resin layer and does not come into contact with the transfer medium P. In the present invention, on the other hand, the bi-layer construction of the claimed endless belt is opposite that of the reference. That is, in the construction of the belt of the present invention, rubber material is fed into a hollow, cylindrical mold, thereby forming a layer therein, which, when cured, forms a first outer layer of the belt that is formed. Thereafter, a resin is fed into the mold which results in the formation of a second layer of the belt, where the resin layer is the inner layer of the endless belt. Accordingly, when the belt of the invention is placed in position within an image recording apparatus, the outer cured rubber layer of the belt, not the inner resin layer, comes into contact with the image transfer medium onto which an image is transferred.

The fact that the rubber/resin layer configurations of the two belts are opposite to each other is not just a simple arbitrary reversal in layer positioning, but rather the different layer configurations are dictated by entirely different objectives in the patent and in the present invention for the preparation of endless belts. In fact, it is clear from the discussion in the patent concerning the great difference ΔV of the surface potential between image portions and non-image portions on the transfer belt that had led to significant scattering of toner on the transfer belt, that it would be desirable to decrease this electrostatic potential on the belt to better fix the transferred toner on the belt so as to stop scattering on the belt. This objective is achieved in the patent by the use of a resin (covering) layer 31 component of the belt 20 which has a relative permittivity ϵ of 6 or less and which has a thickness t (μm) that is

not less than the value of the relative permittivity ϵ ($t \geq \epsilon$), but not more than 200 μm (col 8, lines 10-18). The underlying elastic cured rubber layer is required to have a hardness of 85° or less in order to solve the problem of "void image." In the present invention, on the other hand, the important requirement for the cured rubber outer layer of the belt is that it be elastic enough to accurately follow and to make close contact with the irregular surface of a plain sheet of paper, as the medium onto which the toner image is transferred (see page 18 of the text). In order to achieve this requirement, the surface layer should have a hardness of 30° to 70°. In fact, the softer the surface rubber layer 101 of the invention, the more closely the surface layer of the belt makes contact with the plain paper sheet onto which the image is transferred. The thickness of the elastic layer 101 is also important and is set at 200 to 2000 μm. Clearly, the elastic rubber layer of the belt of the present invention is not only in a different layer position that the elastic layer of the belt of the patent, it also has different characteristics than the elastic layer of the belt of the patent. Moreover, as to the inner resin layer of the present belt, besides providing support for the elastic layer, the resin layer must have a hardness that is greater than that of the first rubber belt layer. No such requirement is stated for the resin layer of the reference relative to the underlying elastic layer. Clearly, the endless belt as claimed in the present invention is distinct from the belt of the reference and withdrawal of the obviousness ground of rejection is respectfully requested.

Applicants remain of the opinion that the application is in proper condition for consideration. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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